

Carolina, Maysville reporting 16.63 inches and New Bern 13.04.

In hurricane Connie some 24 Air Force and Navy radar and penetration fixes have been compared with the Hatteras radar fixes, interpolating for very short periods when necessary. The average deviation in center fixes was 10.5 nautical miles. Some 16 fixes were less than the median value and only 8 were greater. No comparisons were made in Diane since there were only two aircraft fixes. There were 15 comparable fixes in Ione and the average deviation was 9.7 nautical miles. In view of the large radar eye, occasionally as much as 50 to 60 miles in diameter, the agreement is considered excellent. The relative size of the radar eye has been indicated in figures 7 and 8.

CONCLUSIONS

1. The turn to the left by all three hurricanes (Connie, Diane, and Ione) can be attributed to the frictional differential between that portion of the hurricane over land and the portion over water. Because of the increased frictional effect over land and the greater cross-isobaric flow there is an increase of mass and relative increase in pressure in the right front quadrant which deflects the center of lowest pressure to the left. As soon as the greater portion of the hurricane is over land, particularly the core of strongest winds not far from the center, and coincidental with some filling of the center and spreading of the isobars, the frictional differential decreases and the hurricane resumes its normal course. If the hurricane encounters a new source of energy in the form of cyclonic vorticity or of a strong thermal gradient, the deviation to the left is less pronounced due to increased asymmetry and to acceleration but usually some brief relative slowing still occurs. The greater retardation of forward progress in connection with Ione was due to the coincidence of the frictional differential with point of recurvature.

2. Radar is a powerful new tool in hurricane forecasting and research. However, additional radar research is urgently needed that the forecaster may know just what the observer sees on radar, the general relationships of radar, cloud, precipitation, and wind eyes or centers, and the physical processes which go on in each with time.

3. Hurricane radar reports require expert interpretation and no forecast should be based on one individual radar fix.

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